

**Drug Laboratory Yearly  
Check of Secondary Weights**

**Weight ID #:** \_\_\_\_\_ **Room** \_\_\_\_\_ **Date Checked** \_\_\_\_\_

Nominal Weight	*Balance Tolerance**	Uncertainty of Calibrator (100g/200g/2000g/5000g)	Ultra-Class Weight Tolerance	ASTM Class1 Tolerance	Weight Check Tolerance	Certified Weight	Lab Weight
1 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
2 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
2 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
5 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
10 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
20 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
20 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
50 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
100 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
200 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
200 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
500 mg	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.005 mg	N/A	0.249 mg/ 0.305 mg		
1 g	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.02 mg	N/A	0.264 mg/ 0.32 mg		
2 g	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.02 mg	N/A	0.264 mg/ 0.32 mg		
2 g	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.02 mg	N/A	0.264 mg/ 0.32 mg		
5 g	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.02 mg	N/A	0.264 mg/ 0.32 mg		
10 g	Mettler AB104/204 0.2 mg	0.044 mg/0.1 mg	0.03 mg	N/A	0.274 mg/ 0.33 mg		
20 g	Mettler AB104/204 0.3 mg/0.2 mg	0.044 mg/0.1 mg	0.044 mg	N/A	0.388 mg/ 0.288 mg		
20 g	Mettler AB104/204 0.3 mg/0.2 mg	0.044 mg/0.1 mg	0.044 mg	N/A	0.388 mg/ 0.288 mg		
50 g	Mettler AB104/204 0.3 mg/0.4 mg	0.044 mg/0.1 mg	0.07 mg	N/A	0.414 mg/ 0.514 mg		
100 g	Mettler AB104/204 0.3 mg/0.4 mg	0.044 mg/0.1 mg	0.15 mg	N/A	0.494 mg/ 0.594 mg		
200 g	Mettler AB204 0.4 mg	0.10 mg	0.3 mg	N/A	0.8 mg		
500 g	Mettler B3002 DR 30 mg	1.1 mg	N/A	1.2 mg	32.3 mg		
1000 g	Mettler B3002 DR 200 mg	1.1 mg	1.5 mg	2.5 mg	202.6 mg/ 203.6 mg		
2000 g	Mettler B3002 DR 200 mg	1.1 mg	3 mg	N/A	204.1 mg		
5000 g	Mettler PC 16 300 mg	2.2 mg X 3= 6.6 mg	7 mg	12 mg	313.6 mg/ 318.6 mg		

\*Balance Tolerance-Mettler's R&D Division recommends tolerance stated as 2 sigma of repeatability for weights under 10% capacity and above this as 1 sigma of repeatability and 1 sigma of linearity.

\*\* Balance Tolerance not derived using the ISO method of calculating the combined standard uncertainty and expanded uncertainty

**Pass/Fail**

Piro, Peter (DPH)

From: Piro, Peter (DPH)  
Sent: Wednesday, March 09, 2011 6:46 PM  
To: Salemi, Charles (DPH)  
Subject: Yearly Weight Check

Hi, it's Peter, with a friendly reminder for QC. The following weight sets will have calibration certificates expiring in the near future or are ready for their yearly check.

ID Number	Weights	Grade	Expiration Date
Primary Weight Set	1mg-5kg	Troemner UltraClass	September 22, 2010
4000010571	1mg-100g	Troemner UltraClass	April 9, 2010
4000010573	1mg-100g	Troemner UltraClass	April 9, 2010
4000010572	1mg-100g	Troemner UltraClass	April 9, 2010
4000010575	1mg-200g	Troemner UltraClass	April 10, 2010
4000010574	1mg-200g	Troemner UltraClass	April 10, 2010
24390	2000g	Troemner UltraClass	Expired
15080	1000g	Troemner UltraClass	Expired
24391	5000g	Troemner UltraClass	Expired
18949	5000g	Troemner ASTM I	Expired
16948	5000g	Troemner ASTM I	Expired
6430090036	500g	Mettler Toledo ASTM I	No Certificate
6430090037	500g	Mettler Toledo ASTM I	No Certificate
6430090035	500g	Mettler Toledo ASTM I	No Certificate
6430090034	500g	Mettler Toledo ASTM I	No Certificate
6430090040	1000g	Mettler Toledo ASTM I	No Certificate
643004002	1000g	Mettler Toledo ASTM I	No Certificate
6430090039	1000g	Mettler Toledo ASTM I	No Certificate
6430090038	1000g	Mettler Toledo ASTM I	No Certificate



**Balance Weights**  
**Selection Guide**



**Weight Selection Guide**

**Ultra Class:** For analytical and microbalances with readability as low as 1µg. These are the most precise two-piece weights available, with weight tolerances 40 to 50% better than ANSI/ASTM Class 1. Ultra Class weights combine high precision with the advantage of two-piece construction (1g and larger) to avoid costly replacement issues associated with one-piece weights.

**ASTM Class 1:** For analytical and microbalances having a readability of 0.01mg and 0.1mg.

**ASTM Class 4:** For calibration of semi-analytical balances and for student use.

**ASTM Class 6 (also meets OIML Class M2):** Brass weights commonly used by students.

**NIST Class F:** Used primarily to test commercial weighing devices. Also acceptable for verifying scales that have a 0.1% accuracy or lower.

**Other Classes Available:** ANSI/ASTM Class 2 and Class 3, as well as OIML E2 and F1 are also available. Contact your VWR sales representative for information.

To select the proper weight/weight set for a balance, it is recommended that the tolerance of the weight (or largest weight in a set) be three times more accurate than the readability of the balance. Consult a tolerance chart to determine which class is needed. In some cases, the recommended 3-to-1 accuracy ratio is not achievable. For these cases, Troemner Ultra Class weights are recommended, with a NIST/NVLAP or a Traceable Weight Calibration Certificate. These Certificates provide the actual mass value of each weight within the allowable tolerance, which can then be used to determine balance error from weight error.

\*Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code 105013.

WEIGHT TOLERANCE CHART									
Denomination Metric	International Organization of Legal Metrology Recommendation			TROEMNER Ultra Class	ANSI/ASTM E617 105-1				NIST Handbook
	RIII				1	2	3	4	
	E2	F1	M2		Ind mg	Ind mg	mg	mg	g & mg
30 kg				45	75	150	300	600	3.0 g
25 kg				37	62	125	250	500	2.5
20 kg	30	100	3000	30	50	100	200	400	2.0
10 kg	15	50	1500	15	25	50	100	200	1.0
5 kg	7.5	25	750	7	12	25	50	100	500 mg
4 kg				6					
3 kg				4.5	7.5	15	30	60	300
2 kg	3.0	10	300	3	5.0	10	20	40	200
1 kg	1.5	5	150	1.5	2.5	5.0	10	20	100
500 g	0.75	2.5	75	0.7	1.2	2.5	5.0	10	70
300 g				0.45	0.75	1.5	3.0	6.0	60
200 g	0.30	1.0	30	0.3	0.50	1.0	2.0	4.0	40
100 g	0.15	0.5	15	0.15	0.25	0.50	1.0	2.0	20
50 g	0.10	0.30	10	0.07	0.12	0.25	0.60	1.2	10
30 g				0.044	0.074	0.15	0.45	0.90	6.0
20 g	0.080	0.25	8	0.044	0.074	0.10	0.35	0.70	4.0
10 g	0.060	0.20	6	0.03	0.050	0.074	0.25	0.50	2.0
5 g	0.050	0.15	5	0.02	0.034	0.054	0.18	0.36	1.5
3 g				0.02	0.034	0.054	0.15	0.30	1.3
2 g	0.040	0.12	4	0.02	0.034	0.054	0.13	0.26	1.1
1 g	0.030	0.10	3	0.02	0.034	0.054	0.10	0.20	0.90
500 mg	0.025	0.08	2.5	0.005	0.010	0.025	0.080	0.16	0.72
300 mg				0.005	0.010	0.025	0.070	0.14	0.61
200 mg	0.020	0.06	1.5	0.005	0.010	0.025	0.060	0.12	0.54
100 mg	0.015	0.05		0.005	0.010	0.025	0.050	0.10	0.43
50 mg	0.012	0.04		0.005	0.010	0.014	0.042	0.085	0.35
30 mg				0.005	0.010	0.014	0.035	0.070	0.26
20 mg	0.010	0.03		0.005	0.010	0.014	0.030	0.060	0.21
10 mg	0.008	0.025		0.005	0.010	0.014	0.028	0.055	0.17
5 mg	0.006	0.020		0.005	0.010	0.014	0.026	0.052	0.14
3 mg				0.005	0.010	0.014	0.025	0.050	0.12
2 mg	0.006	0.020		0.005	0.010	0.014	0.025	0.050	0.10
1 mg	0.006	0.020		0.005	0.010	0.014	0.025	0.050	0.10

**Drug Analysis Laboratory**  
**Quality Control – Balances**  
**2011**

Name/Model: Mettler PC 16

Manufacturer's Tolerance:

0 - 1650g = +/- 0.2g

Serial #: C30676

1651 - 16,500g = +/- 0.3g

Location: Rm 362

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Day	28	26	31									
Chemist	P.O.	P.P.	P.P.									
1.0g	1.0	1.0	1.0									
100.0g	100.0	100.0	100.0									
1000.0g	1000.1	1000.2	1000.1									
5000.0g	5000.1	5000.1	5000.1									
10,000.0g	10,000.0	10,000.0	9999.9									
15,000.0g	15,000.0	15,000.0	14,999.7									
Sensitivity												
100.0g and 50.0g	100.0	100.0	100.0									
	100.0	100.0	100.0									
QC Review	✓ QSD 02-14-11	✓ QSD 3-14-11	✓ QSD 4-7-11									
QA Review												

**Drug Analysis Laboratory**  
**Quality Control – Balances**  
**2011**

Name/Model: Mettler B3002 DR

Serial #: 1117441268

Location: Rm 363

Manufacturer's Tolerance:

0 – 60g = +/- 0.02g

61 – 600 = +/- 0.03g

601 – 3100 = +/- 0.2g

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Day	1/25	2/25	3/30									
Chemist	PF	PF	PF									
0.10g	0.10g	0.09g	0.10g									
1.00g	1.00g	1.00g	1.01g									
10.00g	10.00g	10.00g	10.00g									
100.00g	100.00g	100.00g	100.00g									
1000.0g	1000.0g	1000.0g	1000.0g									
3000.0g	3000.0g	3000.0g	3000.0g									
Sensitivity	100.00g											
100.00g and 50.00g	100.00g	100.00g	100.00g									
QC Review	✓ ASS 02-14-11	✓ ASS 3-15-11	✓ ASS 4-07-11									
QA Review												

**Drug Analysis Laboratory**  
**Quality Control – Balances**  
**2011**

Name/Model: Mettler AB 204

Serial #: 1117461624

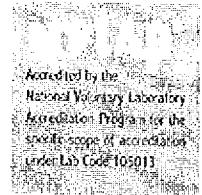
Location: Rm 363

Manufacturer's Tolerance:

0 – 21g = +/- 0.0002g

22 – 210g = +/- 0.0004g

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Day	25	28	30									
Chemist	D.P.	P.F.	ASD									
0.0100g	0.0100g	0.0099g	0.0100									
0.1000g	0.1000g	0.1000g	0.1000									
1.0000g	1.0000g	1.0000g	1.0000									
50.0000g	50.0000g	49,9999g	50.0000									
100.0000g	100.0000g	100.0000g	100.0000									
200.0000g	200.0000g	200.0000g	200.0000									
<hr/>												
Sensitivity												
50.0000g and 10.0000g	50.0000g 49,9999g	49.9999g 49,9999g	50.0000 50.0000									
QC Review	✓ QSD 02-14-11	✓ QSD 3-14-11	✓ QSD 4-7-11									
QA Review												



# Calibration Certificate

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Page 1 of 11 Pages

**Weight**

ID Number

Certificate Number

Date of Calibration 22-SEP-2010

## SECTION 1: NAME AND ADDRESS OF CUSTOMER

End user

State Lab Institute  
305 South Street  
Peter Piro Rm# 361  
Jamaica Plain MA 02130

Client

State Lab Institute  
Purchasing Rm# 208  
305 South Street  
Jamaica Plain MA 02130

## SECTION 2: APPROVED SIGNATORY

  
Lynn Dickerson, Metrologist

## SECTION 3: PERSON PERFORMING WORK

Melanie Cox

## SECTION 4: CERTIFICATE INFORMATION

Description of Masses: ASTM Weight Set

Accuracy Class : Troemner Ultra Class \*  
Order Number : 53010092  
Construction : One Piece, Two Piece  
Material : Aluminum  
: Stainless Steel  
: Stainless Steel  
Serial Number : 37046

Date Received : 13-SEP-2010  
Date of Calibration : 22-SEP-2010  
Date of Issue : 23-SEP-2010  
Weight Range : 1mg, 2mg  
: 5mg-500mg  
: 1g-5kg

## SECTION 5: ENVIRONMENTAL CONDITIONS DURING TEST

Temperature: 21.96°C

Pressure: 763.26 mm Hg

Relative Humidity: 50%

## SECTION 6: PERTINENT INFORMATION

The Weights listed on this calibration report have been compared to reference mass standards that are directly traceable to the National Institute of Standards and Technology under Test No. 822/272103-05.

Reference standards and balances used to perform the calibration are listed in Section 10.

The weights calibrated for this report have been calibrated in accordance with Troemner's calibration process. The calibration performed meets Level I criteria as described in the NIST/NVLAP Technical Guide 150-2.

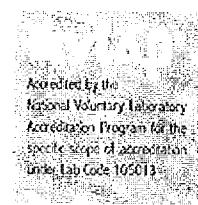
This calibration also meets specifications as outlined in ISO 9001, ISO/IEC 17025, ANSI/NCSL Z540-1-1994, NRC Document 10CFR50 Appendix B, and applicable documents.

\* Troemner's Ultra Class is a enhanced group of weight tolerances which are 40-50% closer to nominal than ASTM E617-97 Class I



Henry Troemner LLC

# Calibration Certificate



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**Weight**

ID Number

Certificate Number

Date of Calibration 22-SEP-2010

NAME AND ADDRESS OF CUSTOMER

End user

State Lab Institute  
305 South Street  
Peter Piro Rm# 361  
Jamaica Plain MA 02130

Client

State Lab Institute  
Purchasing Rm# 208  
305 South Street  
Jamaica Plain MA 02130

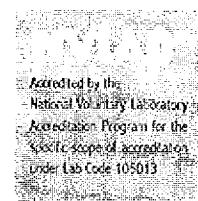
## SECTION 7: TRUE MASS (MASS IN VACUUM) CALIBRATION DATA

Nominal Mass Value	Serial Number	True Mass As Found	True Mass As Left	Density <sup>1</sup> of Weight	Uncertainty ( + or - )
5 kg		5000.0064 g	5000.0064 g	7.9500 g/cm <sup>3</sup>	2.2 mg
2 kg *		2000.0031 g	2000.0031 g	7.9500 g/cm <sup>3</sup>	1.1 mg
2 kg		2000.0021 g	2000.0021 g	7.9500 g/cm <sup>3</sup>	1.1 mg
1 kg		1000.00006 g	1000.00006 g	8.0300 g/cm <sup>3</sup>	0.23 mg
500 g		499.99996 g	499.99996 g	8.0300 g/cm <sup>3</sup>	0.12 mg
200 g *		199.99997 g	199.99997 g	8.0300 g/cm <sup>3</sup>	0.10 mg
200 g		200.00004 g	200.00004 g	8.0300 g/cm <sup>3</sup>	0.10 mg
100 g		99.99999 g	99.99999 g	8.0300 g/cm <sup>3</sup>	0.044 mg
50 g		49.999975 g	49.999975 g	8.0300 g/cm <sup>3</sup>	0.024 mg
20 g *		20.000000 g	20.000000 g	8.0300 g/cm <sup>3</sup>	0.017 mg
20 g		19.999994 g	19.999994 g	8.0300 g/cm <sup>3</sup>	0.017 mg
10 g		10.000001 g	10.000001 g	8.0300 g/cm <sup>3</sup>	0.012 mg
5 g		5.0000014 g	5.0000014 g	8.0300 g/cm <sup>3</sup>	0.0073 mg
2 g *		2.0000074 g	2.0000074 g	8.0300 g/cm <sup>3</sup>	0.0053 mg
2 g		2.0000099 g	2.0000099 g	8.0300 g/cm <sup>3</sup>	0.0053 mg
1 g		0.9999982 g	0.9999982 g	8.0300 g/cm <sup>3</sup>	0.0025 mg
500 mg		0.5000007 g	0.5000007 g	7.9500 g/cm <sup>3</sup>	0.0025 mg
200 mg *X	F	0.1999974 g		7.9500 g/cm <sup>3</sup>	0.0025 mg
200 mg *N			0.2000024 g	7.9500 g/cm <sup>3</sup>	0.0025 mg
200 mg X	F	0.1999969 g		7.9500 g/cm <sup>3</sup>	0.0025 mg
200 mg N			0.2000014 g	7.9500 g/cm <sup>3</sup>	0.0025 mg
100 mg X	F	0.0999967 g		7.9500 g/cm <sup>3</sup>	0.0025 mg
100 mg N			0.1000012 g	7.9500 g/cm <sup>3</sup>	0.0025 mg
50 mg		0.0500010 g	0.0500010 g	7.9500 g/cm <sup>3</sup>	0.0022 mg
20 mg *X	F	0.0199958 g		7.9500 g/cm <sup>3</sup>	0.0021 mg
20 mg *N			0.0200008 g	7.9500 g/cm <sup>3</sup>	0.0021 mg
20 mg		0.0199988 g	0.0199988 g	7.9500 g/cm <sup>3</sup>	0.0021 mg

<sup>1</sup> Density is assumed unless otherwise stated  
\* Denotes weight is marked with a dot

N Denotes new weight

28 As Found / 32 Total  
X Denotes weight labeled out of tolerance



# Calibration Certificate

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Weight

ID Number

Certificate Number

Date of Calibration 22-SEP-2010

## NAME AND ADDRESS OF CUSTOMER

### End user

State Lab Institute  
305 South Street  
Peter Piro Rm# 361  
Jamaica Plain MA 02130

### Client

State Lab Institute  
Purchasing Rm# 208  
305 South Street  
Jamaica Plain MA 02130

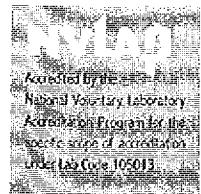
## SECTION 7: TRUE MASS (MASS IN VACUUM) CALIBRATION DATA

Nominal Mass Value	Serial Number	----- True Mass -----	Density <sup>1</sup> of Weight	Uncertainty (+ or -)
		As Found	As Left	
10 mg		0.0100010 g	0.0100010 g	7.9500 g/cm <sup>3</sup> 0.0021 mg
5 mg		0.0050023 g	0.0050023 g	7.9500 g/cm <sup>3</sup> 0.0020 mg
2 mg *		0.0020019 g	0.0020019 g	2.7000 g/cm <sup>3</sup> 0.0020 mg
2 mg		0.0019984 g	0.0019984 g	2.7000 g/cm <sup>3</sup> 0.0020 mg
1 mg		0.0009980 g	0.0009980 g	2.7000 g/cm <sup>3</sup> 0.0020 mg

<sup>1</sup> Density is assumed unless otherwise stated  
\* Denotes weight is marked with a dot

N Denotes new weight

28 As Found / 32 Total  
X Denotes weight labeled out of tolerance



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Page 4 of 11 Pages

**Weight**

ID Number

Certificate Number

Date of Calibration 22-SEP-2010

NAME AND ADDRESS OF CUSTOMER

End user

 State Lab Institute  
 305 South Street  
 Peter Piro Rm# 361  
 Jamaica Plain MA 02130

Client

 State Lab Institute  
 Purchasing Rm# 208  
 305 South Street  
 Jamaica Plain MA 02130

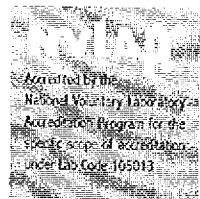
 SECTION 8: MASS IN AIR CALIBRATION VALUE VS. REFERENCE DENSITY 8000 kg m<sup>-3</sup>

Nominal Mass Value	Serial Number	---- Conventional Mass Value ----		Uncertainty (+ or -)	Tolerance <sup>u</sup> (+ or -)
		As Found	As Left		
5 kg		5000.0017 g	5000.0017 g	2.2 mg	7.0000 mg
2 kg *		2000.0013 g	2000.0013 g	1.1 mg	3.0000 mg
2 kg		2000.0002 g	2000.0002 g	1.1 mg	3.0000 mg
1 kg		1000.00062 g	1000.00062 g	0.23 mg	1.5000 mg
500 g		500.00024 g	500.00024 g	0.12 mg	0.7000 mg
200 g *		200.00008 g	200.00008 g	0.10 mg	0.3000 mg
200 g		200.00015 g	200.00015 g	0.10 mg	0.3000 mg
100 g		100.000055 g	100.000055 g	0.044 mg	0.1500 mg
50 g		50.000003 g	50.000003 g	0.024 mg	0.0700 mg
20 g *		20.000011 g	20.000011 g	0.017 mg	0.0440 mg
20 g		20.000005 g	20.000005 g	0.017 mg	0.0440 mg
10 g		10.000007 g	10.000007 g	0.012 mg	0.0300 mg
5 g		5.0000042 g	5.0000042 g	0.0073 mg	0.0200 mg
2 g *		2.0000085 g	2.0000085 g	0.0053 mg	0.0200 mg
2 g		2.0000110 g	2.0000110 g	0.0053 mg	0.0200 mg
1 g		0.9999987 g	0.9999987 g	0.0025 mg	0.0200 mg
500 mg		0.5000002 g	0.5000002 g	0.0025 mg	0.0050 mg
200 mg *X	F	0.1999972 g		0.0025 mg	0.0050 mg
200 mg *N			0.2000022 g	0.0025 mg	0.0050 mg
200 mg X	F	0.1999967 g		0.0025 mg	0.0050 mg
200 mg N			0.2000012 g	0.0025 mg	0.0050 mg
100 mg X	F	0.0999966 g		0.0025 mg	0.0050 mg
100 mg N			0.1000011 g	0.0025 mg	0.0050 mg
50 mg		0.0500009 g	0.0500009 g	0.0022 mg	0.0050 mg
20 mg *X	F	0.0199958 g		0.0021 mg	0.0050 mg
20 mg *N			0.0200008 g	0.0021 mg	0.0050 mg
20 mg		0.0199988 g	0.0199988 g	0.0021 mg	0.0050 mg

\* Denotes weight is marked with a dot

N Denotes new weight

X Denotes weight labeled out of tolerance



# Calibration Certificate

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Weight

ID Number

Certificate Number

Date of Calibration 22-SEP-2010

NAME AND ADDRESS OF CUSTOMER

End user

State Lab Institute  
305 South Street  
Peter Piro Rm# 361  
Jamaica Plain MA 02130

Client

State Lab Institute  
Purchasing Rm# 208  
305 South Street  
Jamaica Plain MA 02130

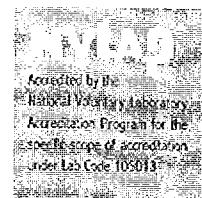
## SECTION 8: MASS IN AIR CALIBRATION VALUE VS. REFERENCE DENSITY 8000 kg m<sup>-3</sup>

Nominal Mass Value	Serial Number	---- Conventional Mass Value ----		Uncertainty (+ or -)	Tolerance <sup>u</sup> (+ or -)
		As Found	As Left		
10 mg		0.0100010 g	0.0100010 g	0.0021 mg	0.0050 mg
5 mg		0.0050023 g	0.0050023 g	0.0020 mg	0.0050 mg
2 mg *		0.0020013 g	0.0020013 g	0.0020 mg	0.0050 mg
2 mg		0.0019978 g	0.0019978 g	0.0020 mg	0.0050 mg
1 mg		0.0009978 g	0.0009978 g	0.0020 mg	0.0050 mg

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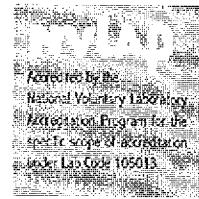
 SECTION 9: MASS IN AIR CALIBRATION DATA VS. REFERENCE DENSITY 8000 kg m<sup>-3</sup>

Nominal Mass Value	Serial Number	-- Conventional Mass Correction --		Uncertainty (+ or -)	Tolerance <sup>(d)</sup> (+ or -)
		As Found	As Left		
5 kg		1.7 mg	1.7 mg	2.2 mg	7.0000 mg
2 kg *		1.3 mg	1.3 mg	1.1 mg -	3.0000 mg
2 kg		0.2 mg	0.2 mg	1.1 mg	3.0000 mg
1 kg		0.62 mg	0.62 mg	0.23 mg	1.5000 mg
500 g		0.24 mg	0.24 mg	0.12 mg	0.7000 mg
200 g *		0.08 mg	0.08 mg	0.10 mg	0.3000 mg
200 g		0.15 mg	0.15 mg	0.10 mg -	0.3000 mg
100 g		0.055 mg	0.055 mg	0.044 mg -	0.1500 mg
50 g		0.003 mg	0.003 mg	0.024 mg	0.0700 mg
20 g *		0.011 mg	0.011 mg	0.017 mg	0.0440 mg
20 g		0.005 mg	0.005 mg	0.017 mg	0.0440 mg
10 g		0.007 mg	0.007 mg	0.012 mg	0.0300 mg
5 g		0.0042 mg	0.0042 mg	0.0073 mg	0.0200 mg
2 g *		0.0085 mg	0.0085 mg	0.0053 mg	0.0200 mg
2 g		0.0110 mg	0.0110 mg	0.0053 mg	0.0200 mg
1 g		-0.0013 mg	-0.0013 mg	0.0025 mg	0.0200 mg
500 mg		0.0002 mg	0.0002 mg	0.0025 mg	0.0050 mg
200 mg *X	F	-0.0028 mg		0.0025 mg	0.0050 mg
200 mg *N			0.0022 mg	0.0025 mg	0.0050 mg
200 mg X	F	-0.0033 mg		0.0025 mg	0.0050 mg
200 mg N			0.0012 mg	0.0025 mg	0.0050 mg
100 mg X	F	-0.0034 mg		0.0025 mg	0.0050 mg
100 mg N			0.0011 mg	0.0025 mg	0.0050 mg
50 mg		0.0009 mg	0.0009 mg	0.0022 mg	0.0050 mg
20 mg *X	F	-0.0042 mg		0.0021 mg	0.0050 mg
20 mg *N			0.0008 mg	0.0021 mg	0.0050 mg
20 mg		-0.0012 mg	-0.0012 mg	0.0021 mg	0.0050 mg

\* Denotes weight is marked with a dot

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**Weight**

ID Number [REDACTED]

Certificate Number [REDACTED]

Date of Calibration 22-SEP-2010

NAME AND ADDRESS OF CUSTOMER

End user  
 State Lab Institute  
 305 South Street  
 Peter Piro Rm# 361  
 Jamaica Plain MA 02130

Client  
 State Lab Institute  
 Purchasing Rm# 208  
 305 South Street  
 Jamaica Plain MA 02130

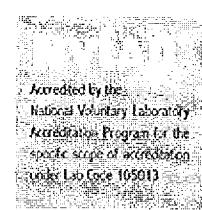
## SECTION 9: MASS IN AIR CALIBRATION DATA VS. REFERENCE DENSITY 8000 kg m<sup>-3</sup>

Nominal Mass Value	Serial Number	-- Conventional Mass Correction --		Uncertainty (+ or -)	Tolerance <sup>u</sup> (+ or -)
		As Found	As Left		
10 mg		0.0010 mg	0.0010 mg	0.0021 mg	0.0050 mg
5 mg		0.0023 mg	0.0023 mg	0.0020 mg	0.0050 mg
2 mg *		0.0013 mg	0.0013 mg	0.0020 mg	0.0050 mg
2 mg		-0.0022 mg	-0.0022 mg	0.0020 mg	0.0050 mg
1 mg		-0.0022 mg	-0.0022 mg	0.0020 mg	0.0050 mg

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 Peter Piro Rm# 361  
 Jamaica Plain MA 02130

Client

 State Lab Institute  
 Purchasing Rm# 208  
 305 South Street  
 Jamaica Plain MA 02130

**SECTION 10: CALIBRATION PROCEDURE DATA**

Nominal Mass Value	Serial Number	Standard Set No.	Cal Due	Balance Used	Cal Due	Procedure Used
5 kg		C003	06/30/11	CC10000S-104A	11/30/10	Multi A-B
2 kg *		C003	06/30/11	CC10000S-104A	11/30/10	Multi A-B
2 kg		C003	06/30/11	CC10000S-104A	11/30/10	Multi A-B
1 kg		C006	06/30/11	AT1005-114A	05/31/11	Multi A-B
500 g		C006	06/30/11	AT1005-114A	05/31/11	Multi A-B
200 g *		C006	06/30/11	AT1005-114A	05/31/11	Multi A-B
200 g		C006	06/30/11	AT1005-114A	05/31/11	Multi A-B
100 g		C008	06/30/11	AT106-118B	05/31/11	Multi A-B
50 g		C008	06/30/11	AT106-118B	05/31/11	Multi A-B
20 g *		C008	06/30/11	AT106-118B	05/31/11	Multi A-B
20 g		C008	06/30/11	AT106-118B	05/31/11	Multi A-B
10 g		C008	06/30/11	AT106-118B	05/31/11	Multi A-B
5 g		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
2 g *		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
2 g		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
1 g		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
500 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
200 mg *X		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
200 mg *N		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
200 mg X		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
200 mg N		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
100 mg X		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
100 mg N		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
50 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
20 mg *X		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
20 mg *N		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
20 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B

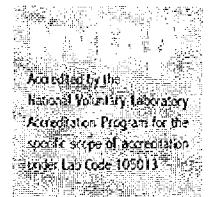
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Weight

ID Number

Certificate Number

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## NAME AND ADDRESS OF CUSTOMER

### End user

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Peter Piro Rm# 361  
Jamaica Plain MA 02130

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Jamaica Plain MA 02130

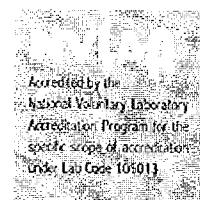
## SECTION 10: CALIBRATION PROCEDURE DATA

Nominal Mass Value	Serial Number	Standard Set No.	Cal Due	Balance Used	Cal Due	Procedure Used
10 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
5 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
2 mg *		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
2 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B
1 mg		C008A	06/30/11	XP6-115B	05/31/11	Multi A-B

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**Weight**

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## SECTION 11: GENERAL INFORMATION

This calibration was performed in Troemner's High Precision Level I Mass Metrology Laboratory at 201 Wolf Drive, Thorofare, New Jersey 08086 unless otherwise noted on page one. The internal procedures used are CAL-CLASSI, CAL-MMAP, and NIST HB145.

## SECTION 12: DEFINITIONS AND TERMS

**MASS IN A VACUUM** - The mass of a weight as if it were measured in a vacuum. Also known as True Mass.

**MASS IN AIR** - The conventional value of the result of weighing in air, in accordance to International Recommendation OIML D 28. For a weight taken at 20° C, the conventional mass is the mass of a reference weight of density 8000 kg·m<sup>-3</sup> which it balances in air of a density of 1.2 kg·m<sup>-3</sup>.

**AS FOUND MASS IN A VACUUM** - The measured value of the mass(es) as they were received by Troemner.

**AS LEFT MASS IN A VACUUM** - The measured value of the mass(es) after they were adjusted, repaired or replaced when necessary. The As Found Mass in a Vacuum will equal the As Left Mass in a Vacuum if the mass(es) did not require adjustment, repair or replacement.

**NOMINAL MASS** - The mass value as marked on the weight.

**CORRECTION** - The difference between the mass value of a weight and its nominal value. A positive correction indicates that the mass value is greater than the nominal value by the amount of the correction.

**AS FOUND CONVENTIONAL MASS CORRECTION** - The conventional correction of the result, as it was received by Troemner, of weighing in air in accordance to International Recommendation D 28. For a weight taken at 20° C, the conventional mass is the mass of a reference weight of density 8000 kg·m<sup>-3</sup> which it balances in air density of 1.2 kg·m<sup>-3</sup>. If the customer requires cleaning prior to calibration, the after cleaning correction would be reported.

**AS LEFT CONVENTIONAL MASS CORRECTION** - The conventional correction of the result, after adjustment, repair, or replacement of weighing in air in accordance to International Recommendation D 28. For a weight taken at 20° C, the conventional mass is the mass of a reference weight of density 8000 kg·m<sup>-3</sup> which it balances in air density of 1.2 kg·m<sup>-3</sup>. The As Found will equal the As Left Conventional Mass Correction if the mass(es) did not require adjustment, repair or replacement.

*(continued on next page)*



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# Calibration Certificate



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## SECTION 12: DEFINITIONS AND TERMS (continued)

**UNCERTAINTY** - The standard deviation associated with the result of the measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurand. The uncertainty is calculated in accordance with NIST TechNote 1297 / UKAS M3003 using a coverage factor of  $k = 2$  ( $k = 2$  defines an interval having a level of confidence of approximately 95 percent). The uncertainty does not include possible effects of magnetism.

**TOLERANCE** - Defines the limits in which the correction value and the uncertainty must fall to meet the tolerance specification for the given Class.

**AS FOUND CONVENTIONAL MASS VALUE** - The measured value of the mass(es) as they were received by Troemner, of weighing in air in accordance to International Recommendation OIML D 28. For a weight taken at 20° C, the conventional mass is the mass of a reference weight of density 8000 kg·m<sup>-3</sup> which it balances in air density of 1.2 kg·m<sup>-3</sup>. If the customer requires cleaning prior to calibration, the after cleaning value would be reported. F denotes Out of Tolerance Weight.

**AS LEFT CONVENTIONAL MASS VALUE** - The measured value of the mass(es) after they were adjusted, repaired or replaced when necessary, of weighing in air in accordance to International Recommendation OIML D 28. For a weight taken at 20° C, the Conventional Mass is the mass of a reference weight of density 8000 kg·m<sup>-3</sup> which it balances in air density of 1.2 kg·m<sup>-3</sup>. The As Found will equal the As Left Conventional Mass Value if the mass(es) did not require adjustment, repair or replacement.

**ASTM E617-97** - Weights meet the tolerance specification for ASTM E617-97. Weights 2kg - 1g screened for magnetism using a Gaussmeter.

## SECTION 13: ADDENDUM

Weight(s) Pass Visual Inspection